

## CLAIMS

What is claimed is:

1. A flexible sheet, comprising:
  - a polyimide base layer; and
  - a metallic layer formed in a grid pattern upon said base layer.
2. The flexible sheet of claim 1, further comprising:
  - a plurality of metallic layers, formed upon said base layer, at least one of said plurality of metallic layers formed in said grid pattern.
3. The flexible sheet of claim 2, wherein said plurality of metallic layers further comprise:
  - an adhesion layer, said adhesion layer further comprising:
    - a chromium layer, applied upon said polyimide base layer; and
    - a copper layer, formed upon said chromium layer;
    - a nickel layer, formed upon said adhesion layer; and
    - a gold layer, formed upon said nickel layer.
4. The flexible sheet of claim 1, wherein said polyimide base layer is about 8 to about 25 angstroms (Å) in thickness.
5. The flexible sheet of claim 4, wherein said polyimide base layer is about 18 angstroms in thickness.
6. The flexible sheet of claim 3, wherein said chromium layer is about 250 angstroms in thickness.

1           7.     The flexible sheet of claim 3, wherein said copper layer is about 1,500 to  
2     about 2,500 angstroms in thickness.

1           8.     The flexible sheet of claim 3, wherein said nickel layer is about 20,000  
2     angstroms in thickness.

1           9.     The flexible sheet of claim 3, wherein said gold layer is about 350 to about  
2     15,000 angstroms in thickness.

1           10.    The flexible sheet of claim 3, wherein said nickel layer is formed upon  
2     said adhesion layer by plating in accordance with said grid pattern.

1           11.    The flexible sheet of claim 10, wherein said gold layer is formed upon said  
2     nickel layer by plating in accordance with said grid pattern.

1           12.    The flexible sheet of claim 11, wherein portions of said adhesion layer are  
2     removed such that remaining portions of said adhesion layer conform to said grid pattern.

1           13.    The flexible sheet of claim 12, wherein said removed portions of said  
2     adhesion layer are removed by etching.

1           14.    The flexible sheet of claim 10, wherein said gold layer is formed upon said  
2     nickel layer by evaporation thereon.

1           15.    The flexible sheet of claim 10, wherein:  
2                   portions of said adhesion layer are removed such that remaining portions  
3 of said adhesion layer conform to said grid pattern; and  
4                   said gold layer is formed upon said nickel layer by evaporation thereon.

1           16.    The flexible sheet of claim 15, wherein said removed portions of said  
2 adhesion layer are removed by etching.

1           17.    The flexible sheet of claim 3, wherein said nickel layer provides a  
2 diffusion barrier between said adhesion layer and said gold layer.

1           18.    The flexible sheet of claim 17, wherein said gold layer has low contact  
2 resistance.

1           19.    The flexible sheet of claim 18, wherein said gold layer protects underlying  
2 layers from oxidation.

1           20.    The flexible sheet of claim 1, wherein said grid pattern further comprises:  
2                   a plurality of horizontally oriented strips; and  
3                   a plurality of vertically oriented strips.

1           21.    The flexible sheet of claim 20, wherein:  
2                   said plurality of horizontally and vertically oriented strips have a width of  
3 about 25  $\mu\text{m}$  to about 50  $\mu\text{m}$ .

1           22.    The flexible sheet of claim 21, wherein:  
2                   said plurality of horizontally oriented strips are separated from one another  
3           by about 15  $\mu\text{m}$  to about 25  $\mu\text{m}$ .

1           23.    The flexible sheet of claim 22, wherein:  
2                   said plurality of vertically oriented strips are separated from one another  
3           by about 25  $\mu\text{m}$  to about 1 mm.

1           24.    A method of forming a flexible sheet, comprising:  
2                   forming a polyimide base layer; and  
3                   depositing a metallic layer in a grid pattern upon said base layer.

1           25.    The method of claim 24, further comprising:  
2                   depositing a plurality of metallic layers upon said base layer, at least one  
3           of said plurality of metallic layers formed in said grid pattern.

1           26.    The method of claim 25, wherein said depositing a plurality of metallic  
2           layers further comprises:  
3                   forming an adhesion layer, said adhesion layer further comprising:  
4                           a chromium layer, applied upon said polyimide base layer; and  
5                           a copper layer, formed upon said chromium layer;  
6                   forming a nickel layer upon said adhesion layer; and  
7                   forming a gold layer upon said nickel layer.

1           27.    The method of claim 24, wherein said polyimide base layer is about 8 to  
2           about 25 angstroms ( $\text{\AA}$ ) in thickness.

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1           28.    The method of claim 27, wherein said polyimide base layer is about 18  
2    angstroms in thickness.

1           29.    The method of claim 26, wherein said chromium layer is about 250  
2    angstroms in thickness.

1           30.    The method of claim 26, wherein said copper layer is about 1,500 to about  
2    2,500 angstroms in thickness.

1           31.    The method of claim 26, wherein said nickel layer is about 20,000  
2    angstroms in thickness.

1           32.    The method of claim 26, wherein said gold layer is about 350 to about  
2    15,000 angstroms in thickness.

1           33.    The method of claim 26, wherein said nickel layer is formed upon said  
2    adhesion layer by plating in accordance with said grid pattern.

1           34.    The method of claim 33, wherein said gold layer is formed upon said  
2    nickel layer by plating in accordance with said grid pattern.

1           35.    The method of claim 34, wherein portions of said adhesion layer are  
2    removed such that remaining portions of said adhesion layer conform to said grid pattern.

1           36.    The method of claim 35, wherein said removed portions of said adhesion  
2    layer are removed by etching.

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1           37.    The method of claim 33, wherein said gold layer is formed upon said  
2   nickel layer by evaporation thereon.

1           38.    The method of claim 33, wherein:  
2                   portions of said adhesion layer are removed such that remaining portions  
3   of said adhesion layer conform to said grid pattern; and  
4                   said gold layer is formed upon said nickel layer by evaporation thereon.

1           39.    The method of claim 38, wherein said removed portions of said adhesion  
2   layer are removed by etching.

1           40.    The method of claim 26, wherein said nickel layer provides a diffusion  
2   barrier between said adhesion layer and said gold layer.

1           41.    The method of claim 40, wherein said gold layer has low contact  
2   resistance.

1           42.    The method of claim 41, wherein said gold layer protects underlying layers  
2   from oxidation.

1           43.    The method of claim 24, wherein said grid pattern further comprises:  
2                   a plurality of horizontally oriented strips; and  
3                   a plurality of vertically oriented strips.

1           44.    The method of claim 43, wherein:  
2                   said plurality of horizontally and vertically oriented strips have a width of  
3   about 25  $\mu\text{m}$  to about 50  $\mu\text{m}$ .

1           45.    The method of claim 44, wherein:  
2                   said plurality of horizontally oriented strips are separated from one another  
3   by about 15  $\mu\text{m}$  to about 25  $\mu\text{m}$ .

1           46.    The method of claim 44, wherein:  
2                   said plurality of vertically oriented strips are separated from one another  
3   by about 25  $\mu\text{m}$  to about 1 mm.